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ABSTRACT

The Beltman multi-media traffic safety program was evaluated as an instructional tool in grades K-3. The foremost objective of the Beltman program is to develop the habit of wearing seat belts and to develop positive safety attitudes. Three study groups made up of 550 second grade students were divided into one control and two experimental groups. The control group teachers taught safety in the traditional way. Experimental group teachers received inservice training and followed 16 lesson plans featuring the Beltman program. At the time of the first behavioral assessment, the three groups exhibited statistically the same total on out-of-school safety behavior. On the follow-up assessment, the experimental group students exhibited statistically more positive out-of-school safety behavior than did the control group students. Graphs, survey instruments, the traffic safety questionnaire, and the experimental teachers' evaluation form are appended. (JD)

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THE EFFECT OF ELEMENTARY TRAFFIC SAFETY PROGRAMS ON OUT-OF-SCHOOL SAFETY BEHAVIOR

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THE EFFECT OF ELEMENTARY TRAFFIC SAFETY PROGRAMS ON OUT-OF-SCHOOL SAFETY BEHAVIOR. Deborah A. Miller, College of Charleston.

The purpose of the study was to determine whether or not the Beltman multi-media traffic safety program for elementary children was superior to a traditional traffic safety program. Superiority of one program over the other was determined by positive out-of-school safety behavior. A modified nonrandomized control-group pretest-posttest design was employed utilizing two experimental groups. Approximately 540 second grade students were involved in the study. The treatment period lasted two months, with lessons being taught twice a week for 30 minutes or three times a week for 20 minutes. Experimental group 2 received two additional lessons to be used as supplementary instruction in February. Traffic safety knowledge was assessed in September and November, 1981 and April, 1982 utilizing a 20 item multiple-choice test instrument which was developed specifically for this study. Results from the pre-test indicated that all three groups had equivalent traffic safety knowledge at the beginning of the school year. Post-test 1 was administered immediately after the Beltman program had been taught. The experimental groups scored significantly higher than the control group, but no different from one another. The results from post-test 2 were exactly the same. Whether or not the students received the reinforcing lessons, the experimental students scored significantly higher than the control students on the knowledge test. Out-of-school safety behavior was determined by the parents of every child involved in the study. A seven item postcard questionnaire was mailed to the parents at the same time both post-tests were given. When analyzed question by question, the behavioral effect of Beltman was not consistent. Immediately after the Beltman program, seat belt usage increased significantly. However, four months after the programended, seat belt usage dropped, and there were no significant differences between control and experimental groups. On the second parent questionnaire, experimental group 1 used crosswalks significantly more than either of the other groups and experimental group 2 scanned significantly more than the remainin

groups. A different picture is obtained when a summed behavior score for each child is calculated. Combining the questions about seat belts and pedestrian behavior and scoring positive behaviors the highest, a child's behavior score could have ranged from 6 to 24. The pattern is similar to the findings on the knowledge portion of the evaluation. The Beltman program was more effective than a traditional safety program in instilling positive out-of-school safety behavior.

PURPOSE

The purpose of this study was to evaluate the suitability of the Beltman multi-media traffic safety program as an instructional tool in grades K-3. Under the Highway Safety Act of 1978, states were able to receive federal funds to pilot test traffic safety programs in the public schools. The grant funds for this study were secured through the Oregon Traffic Safety Commission and the grant period ran from July 1, 1981 to July 1, 1982. The foremost objective of the Beltman program is to develop the habit of wearing a seat belt. An additional underlying goal of the program is to develop positive safety attitudes, thus continuing to influence students' behavior as pedestrians, bicyclists and eventually drivers. The criteria used to determine suitability were stated in the grant as follows:

1. to motivate children to utilize traffic safety rules taught in the program.
2. to provide a variety of instructional materials that implement the district's traffic safety objectives.
3. to present clear and accurate concepts.

In addition to the above evaluation criteria, three additional objectives were identified. These objectives were:

1. to develop an evaluation design that could be applied to other traffic safety materials.
2. to effect a real change in student out-of-school traffic safety behavior.
3. to increase parent's awareness of the need to use seat belts.

METHODOLOGY

A total of 28 second grade teachers volunteered to participate in the study. The total second grade student population for these teachers was 550. Random assignment to three study groups resulted in 10 teachers (180 students) serving as control group participants and nine teachers (190 and 180 students respectively) participating in one of two experimental groups.

An inservice was presented on September 15, 1981 for all experimental teachers. To maintain consistency across the experimental groups, 16 lesson plans were developed and provided to each teacher. The treatment period lasted eight weeks and lessons could be taught twice a week for 30 minutes or three times a week for twenty minutes. The instruction for the experimental groups started in September.

The control group teachers were to administer the tests at the appropriate times and teach safety areas as they normally would. The first Beltman experimental group was to present the Beltman materials and test at the selected times. A second experimental group added two "booster" lessons four months after the initial materials were presented.

To measure the safety knowledge of the second grade students, a 20 item multiple-choice test was developed. Three response choices were devised for each question and illustrations were included whenever possible. A postcard sized questionnaire to be mailed to parents was developed to measure each child's out-of-school safety behavior. In addition, a checklist was formulated for the experimental teachers to independently evaluate the Beltman materials.

Time Schematic & Design of Beltman Evaluation

	Sept. '81	Sept.-Nov. '81	Nov. '81	Feb. '82	April '82
Control	O		O, P		O, P
Exp. 1	O	X	O, P		O, P
Exp. 2	O	X	O, P	X	O, P

O = testing procedures

X = treatment procedures

P = questionnaires mailed to parents regarding out of school safety behavior of their child and awareness of traffic safety

RESULTS

Based on the test instrument and parent questionnaire, the following results were obtained:

1. The three groups had statistically equivalent traffic safety knowledge at the beginning of the school year prior to the Beltman program (Graph 1). All three groups of second graders answered an average of between 60 and 70 percent of the items correctly.

2. The students who had the Beltman program and the students who had the Beltman program plus booster lessons scored significantly higher on post-test 1 than the control students, but no differently than one another (Graph 1). (It should be noted that experimental group 2 had not received their booster lessons at the time of post-test 1).

3. At the follow-up testing time, similar results as at the first post-test time were found (Graph 1). The two Beltman groups had statistically higher scores and were, in fact, correct on an average of ninety percent of the items.

4. There were no significant differences between experimental group 1 and experimental group 2 on post-test 2. Both groups scored high on the second knowledge test and the retention level was high for the students who did not receive booster lessons.

5. Seat belt usage and buckling up without being reminded did not differ between control and experimental students on either parent questionnaire.

6. More experimental students than expected were observed using their seat belts after the treatment period. The proportionate number of experimental students buckling up now when they did not before school started was greater than the proportionate number of control students on the first questionnaire (Questionnaire).

7. The control and experimental students did not differ in their crosswalk usage on the first parent questionnaire. On questionnaire two, however, proportionately more students in experimental group 1 were reported "always" crossing in crosswalks than in the other two groups.

8. Scanning behavior did not differ between control and experimental students on the first parent questionnaire. However, the proportionate number of students exhibiting safe crossing skills in each category was different on the second questionnaire. Students in experimental group 2 were more likely than expected to "always" scan before crossing. Interestingly, the control students were observed more than expected in "usually" looking befoe crossing.

The behavioral effect of Beltman when comparing experimental and control groups by an item analysis on the parent questionnaires was not consistent. A different picture is obtained, however, when a summed behavior score for each child is calculated. Combining the questions about seat belts and pedestrian behavior and scoring positive behaviors the highest, a child's behavior score could have ranged from 6 to 24. The pattern is similar to the findings on the knowledge portion of the evaluation.

The following results were obtained based on a summed behavior score:

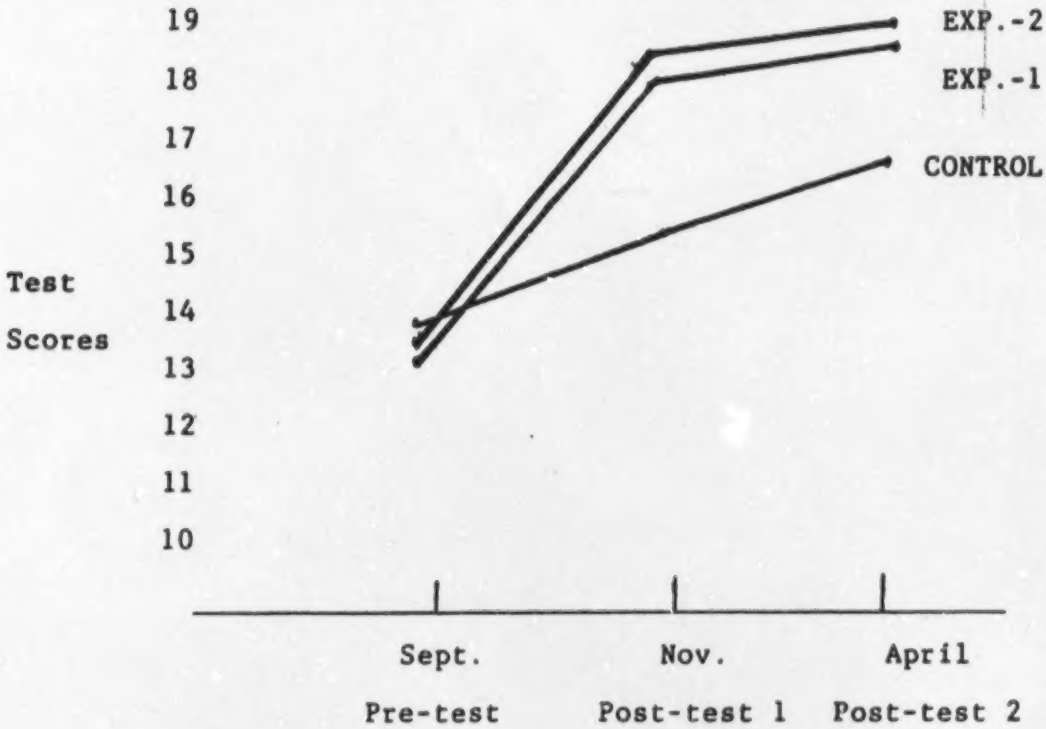
1. At the time of the first behavioral assessment, November 1981, the three study groups exhibited statistically the same total out-of-school safety behavior (Graph 2).

2. On the follow-up assessment, the experimental students exhibited statistically more positive out-of-school safety behavior than the control students. These behavioral results are very similar to the knowledge score results from pre-test to post-test time.

In conclusion, the Beltman program is a valuable instructional tool in teaching passenger and pedestrian safety. It was more effective than the traditional traffic safety program in developing overall safety behavior. Based on the results of this study, elementary traffic safety programs can instill positive out-of-school safety behavior.

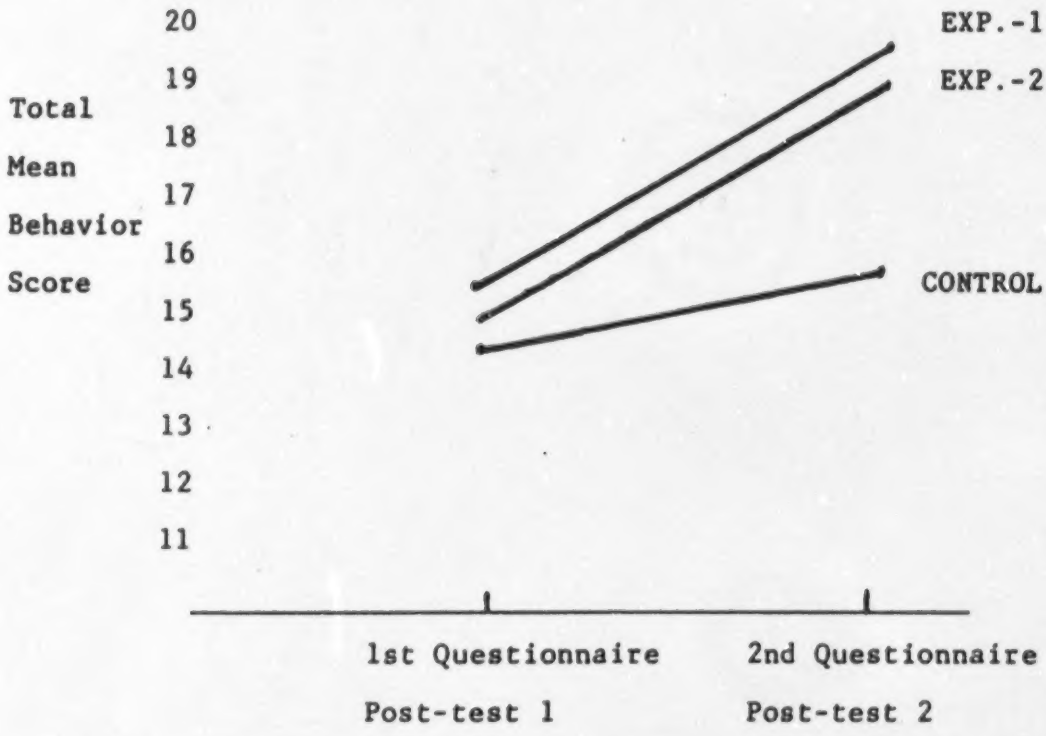
Graph 1

A Comparison of the Mean Test Scores of the Control and Experimental Group Students



Graph 2

Total Out-Of-School Traffic Safety Behavior Scores
by Group Membership and Questionnaire



1) Have you heard about Beltman? Yes_____ No_____
If yes, what?_____

2) Does your child use a seat belt when s/he rides in a car?
Always_____ Usually_____ Rarely_____ Never_____

Does s/he buckle up without being reminded by you?
Always_____ Usually_____ Rarely_____ Never_____

3) Does your child ask YOU to wear your seat belt?
Always_____ Sometimes_____ Never_____

4) Has your CHILD'S use of the seat belt changed since the beginning of this year?
_____ a) Did not use it before school started, but uses it now.
_____ b) Used it before school started, but does not use it now.
_____ c) Did not use it before school started and does not use it now.
_____ d) Used it before school started and continues to use it now.

5) Does s/he cross in crosswalks?
Always_____ Usually_____ Rarely_____ Never_____ No Observation_____

6) Does s/he carefully look in all directions to see if it is clear before crossing?
Always_____ Usually_____ Rarely_____ Never_____ No Observation_____

7) Has YOUR use of the seat belt changed since the beginning of this year?
_____ a) Did not use it before school started, but use it now.
_____ b) Used it before school started, but do not use it now.
_____ c) Did not use it before school started and do not use it now.
_____ d) Used it before school started and continue to use it now.

Rating scale for total out-of-school safety behavior score

1) Have you heard about Beltman? Yes_____ No_____
If yes, what?_____

2) Does your child use a seat belt when s/he rides in a car?
Always 4 Usually 3 Rarely 2 Never 1

Does s/he buckle up without being reminded by you?
Always 4 Usually 3 Rarely 2 Never 1

3) Does your child ask you to wear your seat belt?
Always 4 Sometimes 2.5 Never 1

4) Has your child's use of the seat belt changed since the beginning of this year?
A. Yes_____ 1. Did not use it before school started, but uses it now. 4
2. Used it before school started, but does not use it now. 1
B. No _____ 1. Did not use it before school started and does not use it now. 2
2. Used it before school started and continues to use it now. 3

5) Does s/he cross in crosswalks?
Always 4 Usually 3 Rarely 2 Never 1 No opportunity to observe 0

6) Does s/he carefully look in all directions to see if it is clear before crossing?
Always 4 Usually 3 Rarely 2 Never 1 No opportunity to observe 0

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TRAFFIC SAFETY QUESTIONNAIRE

Directions to teacher: This questionnaire is designed to determine your students' knowledge in traffic safety. (This is not a reading test.) Please read the questions aloud to assist your students in answering each question. Tell students to circle letter next to the right answer.

1. What is a pedestrian?

   A. any person who rides a bike
   *B. any person who walks
   C. any person who rides a bus

2. Where is the proper place to fasten the safety belt around your body?

   A. stomach
   B. legs
   *C. hips

3. Which side should you get in and out of the car?

   *A. at the curb
   B. in the street

4. What is a passenger?

   *A. any person who rides in a car or bus
   B. any person who walks
   C. any person who runs

5. What is an intersection?

   A. middle of the block
   *B. where streets come together
   C. a parking lot

6. When there are no sidewalks, where do you walk?

   *A. off the road, facing the cars
   B. off the road, going the same way as the cars
   C. in the road

7. What does a yellow light mean?

   A. go ahead
   *B. watch out, the light will soon turn red
   C. the light will soon turn green

8. When crossing the street you should cross

   *A. between the crosswalk lines
   B. in the middle of the street
   C. where you feel will be safest

TRAFFIC SAFETY QUESTIONNAIRE (continued)

9. If the shoulder harnass crosses your neck in the front seat, what does that mean?

   A. you can use it safely
   B. you are too tall to sit in the front seat
   *C. you are too short and should move to the back seat

10. When walking at night, what color clothing should you wear?

   *A. light colors
   B. dark colors
   C. color does not matter

11. Should you accept a ride from a stranger?

   A. Yes
   *B. No

12. What does a red light mean?

   *A. stop, do not go
   B. you may safely cross the street
   C. look both ways first and then hurry across the street

13. When scanning you should

   A. look up and down the street only
   B. look across the street and up and down the street
   *C. look over your shoulder, across the street and up and down the street

14. When crossing a driveway or alley you should

   A. run quickly across the driveway or alley
   *B. wait and look before crossing
   C. never cross a driveway or alley

15. Is it always safe to go when the walk light says "walk"?

   A. yes, the light is giving you permission to cross
   *B. no, you must scan to be sure no cars are coming

16. What is a "safe" passenger?

   A. any person who locks the doors
   B. any person who sits quietly and locks the doors
   *C. any person who wears his safety belt, sits quietly in the car and locks the doors

17. What does this sign tell you?

   *A. railroad crossing
   B. bicycle crossing
   C. pedestrian crossing

TRAFFIC SAFETY QUESTIONNAIRE (continued)

18. What does this sign tell you?

A. proceed with caution
B. points the way to a path for pedestrians only
*C. both cars and pedestrians must stop

19. What does this signal tell you?

A. don't walk, but run quickly
*B. do not cross in the direction facing the signal
C. school crosswalk ahead

20. What does this sign tell you?

*A. dangerous curve ahead
B. no walking along the side of the road
C. blind alley ahead

Experimental Teacher's Evaluation
of the Beltman Materials

Name_____ School_____

REACHING PROGRAM OBJECTIVES (check one)	EXCELLENT	GOOD	FAIR	POOR
1. Teaches proper use of the safety belt	15	3		
2. Motivates children to buckle-up	12	5		
3. Teaches children to cross at intersections	10	8		
4. Motivates use of proper scanning	13	5		
5. Motivates children to walk, not run	5	11		
6. Provides a variety of instructional aids	16	2		
7. Easy to integrate into the curriculum	11	7		
8. Develops enthusiasm for the subject	16	2		

QUALITY AND USEFULNESS OF MATERIALS	EXCELLENT	GOOD	FAIR	POOR
1. BELTMAN MEETS THE TEACHER (audio film strip)	11	5		
2. THE ADVENTURES OF BELTMAN (audio film strip)	16	2		
3. Federally approved lap belt	14	4		
4. 250 BELTMAN logo dots	10	8		
5. 250 BELTMAN iron-on patches	11	7		
6. BELTMAN SAFE WALKING BOOK (book)	8	6	2	1
7. Scan poster	6	10	1	1
8. Traffic light form + 3 glassines	6	8	4	
9. 40 card Communication Card Deck	8	8	2	
10. 6 Lotto boards	8	3	2	1
11. Teacher Pictorial Overview	4	7	1	
12. Teacher's Curriculum Guide	7	4	4	
13. Plastic storage box	10	6		

ADDITIONAL COMMENTS REQUESTED ON BACK PAGE - PLEASE TURN OVER